Received - 7 January 2020
Planning Applications Group

Full Input Data And Results

User and Project Details

Project:	**Bean Road**
Title:	**Bean Tunnel**
Location:	
Design Layout Ref:	Bean Road Tunnel – Staggered Junction
Date Started:	September 2019
Date Completed:	December 2019
Model Purpose:	To test signal timing for the new tunnel.
Flow Details:	Worst case taken for the southbound; 3rd March Sunday @ 11-12 80% allocated to link 1/1; 20% to link 1/2; 10% to link 2/1 and 90% to link 2/2. Phase D simulates a Toucan phase across the 4 lanes and the central island.
Checked By:	Alex Ben-Eghan
Checked By Date:	18 December 2019
Additional detail:	This revised output is for 120s pedestrian cycle time and separate right and left turning bus movements.
File name:	Blue Water Tunnel Lane Split Ped Stag 120 secs 8020 1090 split MH.lsg3x
Author:	Ana Ferreira/ Phil Leone -Ganado
Company:	Jacobs
Address:	2nd Floor Cottons Centre, Cottons Lane, London SE1 2QG

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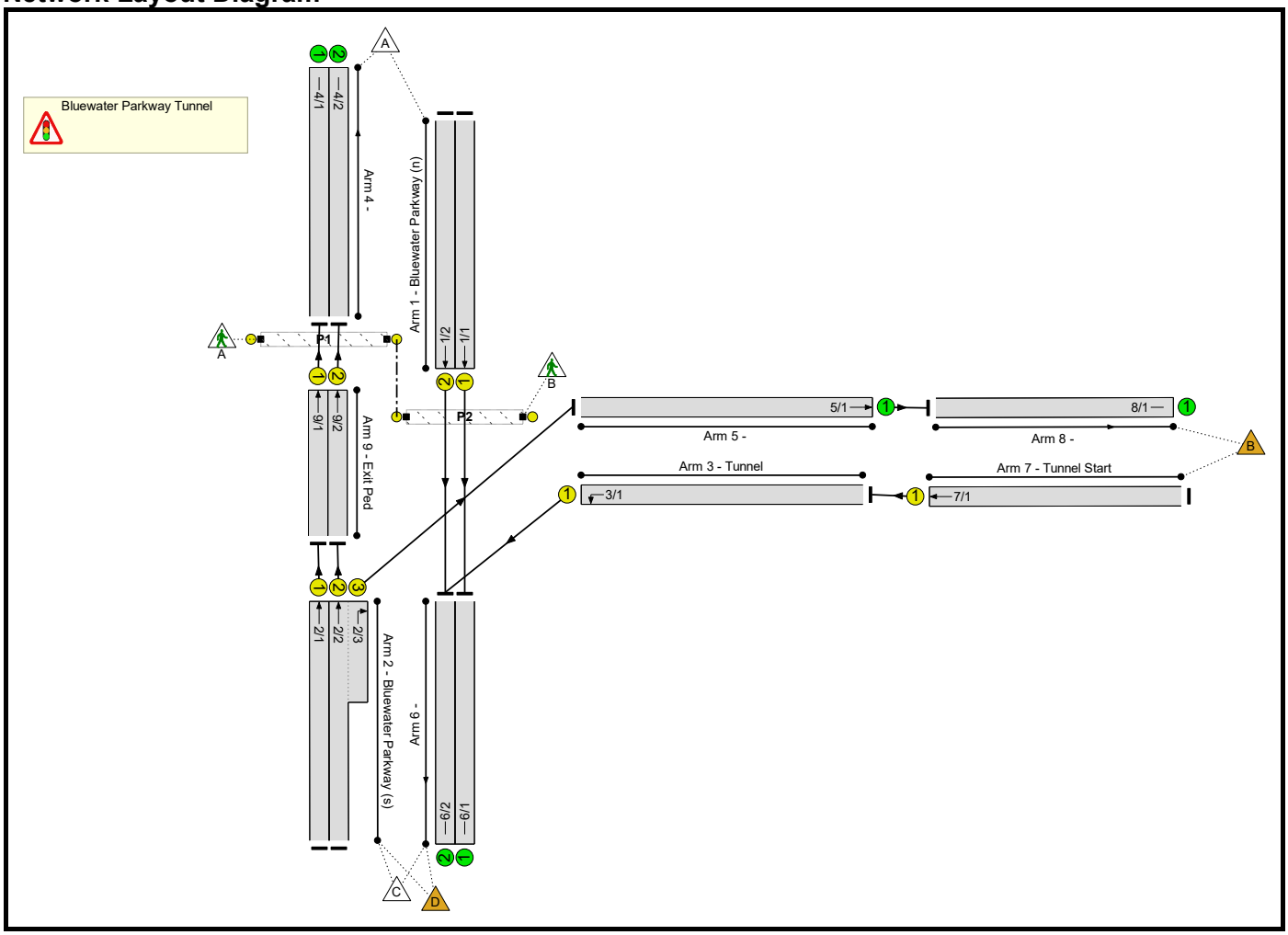
Network Layout Diagram



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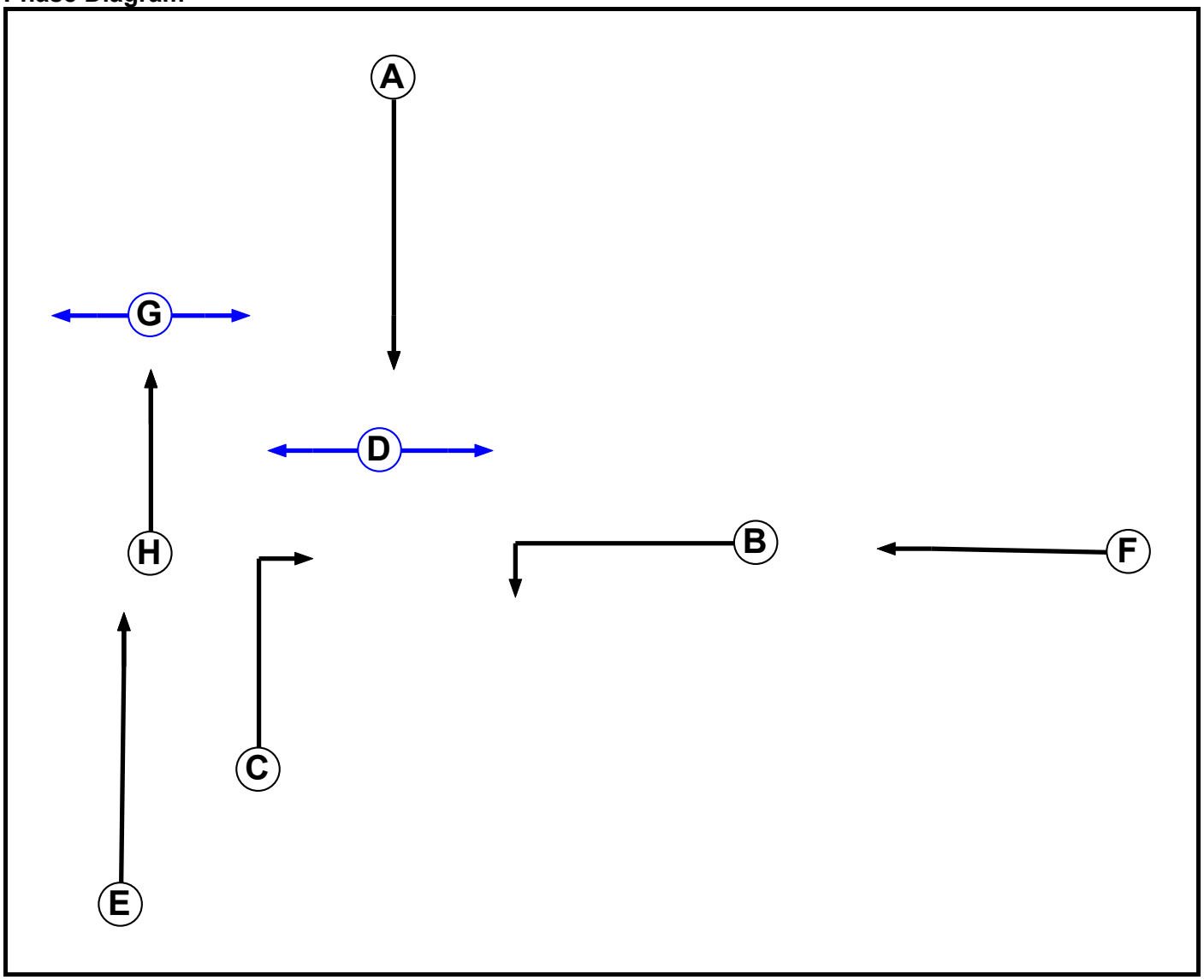
Phase Diagram



Phase Input Data

Phase Name	Phase Type	Stage Stream	Assoc. Phase	Street Min	Cont Min
A	Traffic	1		7	7
B	Traffic	1		7	7
C	Traffic	1		7	7
D	Pedestrian	1		6	6
E	Traffic	1		7	7
F	Traffic	1		7	7
G	Pedestrian	2		6	6
H	Traffic	2		7	7

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Phase Intergreens Matrix

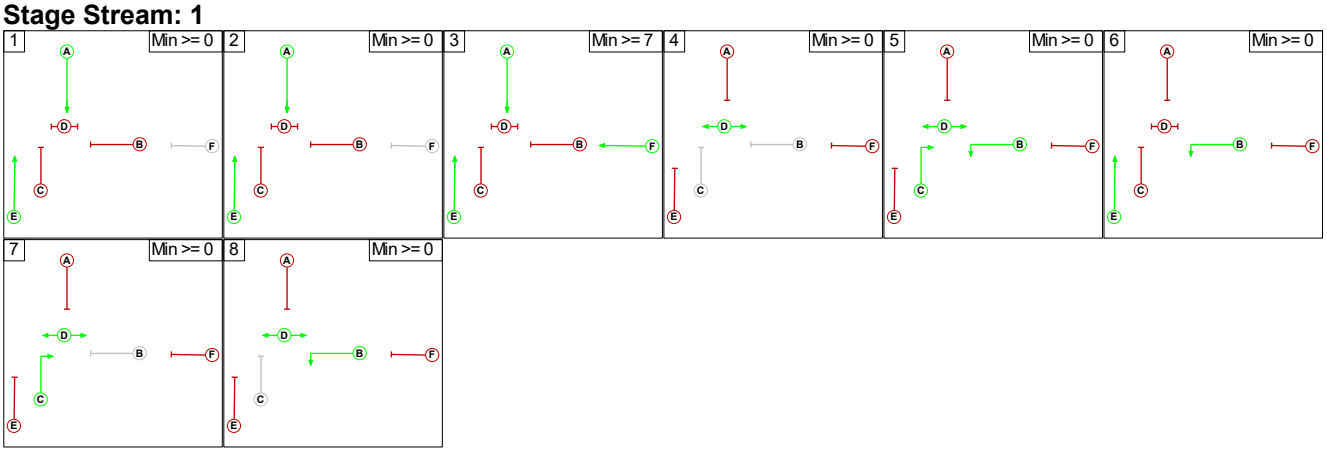
		Starting Phase							
		A	B	C	D	E	F	G	H
Terminating Phase	A		5	5	5	-	-	-	-
	B	5		-	-	-	5	-	-
	C	5	-		-	5	10	-	-
	D	9	-	-		9	9	-	-
	E	-	-	5	5		-	-	-
	F	-	5	5	5	-		-	-
	G	-	-	-	-	-	-		9
	H	-	-	-	-	-	-	5	

Phases in Stage

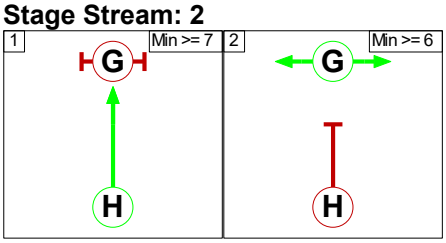
Stream	Stage No.	Phases in Stage
1	1	A E
1	2	A E
1	3	A E F
1	4	D
1	5	B C D
1	6	B E
1	7	C D
1	8	B D
2	1	H
2	2	G

Stage Diagram

Stage Stream: 1



Stage Stream: 2



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Phase Delays

Stage Stream: 1

Term. Stage	Start Stage	Phase	Type	Value	Cont value
3	5	A	Losing	10	10
3	5	E	Losing	10	10

Stage Stream: 2

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Prohibited Stage Change

Stage Stream: 1

From Stage \ To Stage	1	2	3	4	5	6	7	8
1		0	2	5	5	5	5	5
2	0		2	5	5	5	5	5
3	0	0		5	15	5	5	5
4	9	9	9		2	9	2	2
5	9	9	10	0		9	0	0
6	5	5	5	5	5		5	5
7	9	9	10	0	2	9		2
8	9	9	9	0	2	9	2	

Stage Stream: 2

From Stage \ To Stage	1	2
1		5
2	9	

Full Input Data And Results

Give-Way Lane Input Data

Junction: Bluewater Parkway Tunnel
There are no Opposed Lanes in this Junction

Full Input Data And Results

Lane Input Data

Junction: Bluewater Parkway Tunnel

Lane	Lane Type	Phases	Start Disp.	End Disp.	Physical Length (PCU)	Sat Flow Type	Def User Saturation Flow (PCU/Hr)	Lane Width (m)	Gradient	Nearside Lane	Turns	Turning Radius (m)
1/1 (Bluewater Parkway (n))	U	A	2	3	6.1	Geom	-	3.25	0.00	Y	Arm 6 Ahead	Inf
1/2 (Bluewater Parkway (n))	U	A	2	3	6.1	Geom	-	3.25	0.00	Y	Arm 6 Ahead	Inf
2/1 (Bluewater Parkway (s))	U	E	2	3	51.0	Geom	-	3.25	0.00	Y	Arm 9 Ahead	Inf
2/2 (Bluewater Parkway (s))	U	E	2	3	8.9	Geom	-	3.25	0.00	Y	Arm 9 Ahead	Inf
2/3 (Bluewater Parkway (s))	U	C	2	3	7.8	Geom	-	3.25	0.00	Y	Arm 5 Right	17.00
3/1 (Tunnel)	U	B	2	3	17.4	Geom	-	3.60	0.00	Y	Arm 6 Left	13.00
4/1	U		2	3	60.0	Inf	-	-	-	-	-	-
4/2	U		2	3	60.0	Inf	-	-	-	-	-	-
5/1	U		2	3	30.6	Inf	-	-	-	-	-	-
6/1	U		2	3	60.0	Inf	-	-	-	-	-	-
6/2	U		2	3	60.0	Inf	-	-	-	-	-	-
7/1 (Tunnel Start)	U	F	2	3	60.0	Geom	-	3.25	0.00	Y	Arm 3 Ahead	Inf
8/1	U		2	3	60.0	Inf	-	-	-	-	-	-
9/1 (Exit Ped)	U	H	2	3	60.0	Geom	-	3.25	0.00	Y	Arm 4 Ahead	Inf
9/2 (Exit Ped)	U	H	2	3	5.2	Geom	-	3.25	0.00	Y	Arm 4 Ahead	Inf

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: 'Sun 11-12'	11:00	12:00	01:00	

Scenario: '240 secs Sun 11-12 Bus+Ped' (FG1: 'Sun 11-12', Plan 4: 'Network Control Plan 4 300 secs Bus+Ped')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	0	1430	0	1430
	B	0	0	0	27	27
	C	473	0	0	0	473
	D	0	27	0	0	27
	Tot.	473	27	1430	27	1957

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Traffic Lane Flows

Lane	Scenario 3: 240 secs Sun 11-12 Bus+Ped
Junction: Bluewater Parkway Tunnel	
1/1	1144
1/2	286
2/1	251
2/2 (with short)	249(In) 222(Out)
2/3 (short)	27
3/1	27
4/1	251
4/2	222
5/1	27
6/1	1144
6/2	313
7/1	27
8/1	27
9/1	251
9/2	222

Full Input Data And Results

Lane Saturation Flows

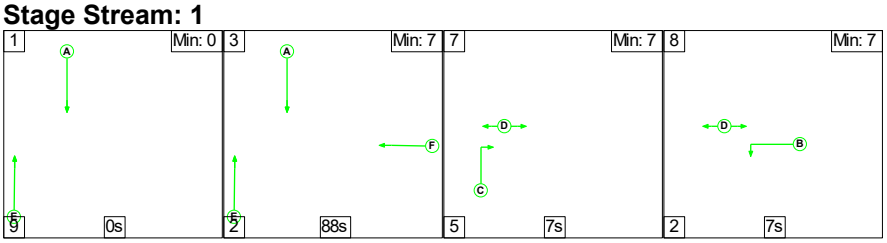
Junction: Bluewater Parkway Tunnel								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (Bluewater Parkway (n))	3.25	0.00	Y	Arm 6 Ahead	Inf	100.0 %	1940	1940
1/2 (Bluewater Parkway (n))	3.25	0.00	Y	Arm 6 Ahead	Inf	100.0 %	1940	1940
2/1 (Bluewater Parkway (s))	3.25	0.00	Y	Arm 9 Ahead	Inf	100.0 %	1940	1940
2/2 (Bluewater Parkway (s))	3.25	0.00	Y	Arm 9 Ahead	Inf	100.0 %	1940	1940
2/3 (Bluewater Parkway (s))	3.25	0.00	Y	Arm 5 Right	17.00	100.0 %	1783	1783
3/1 (Tunnel)	3.60	0.00	Y	Arm 6 Left	13.00	100.0 %	1771	1771
4/1	Infinite Saturation Flow						Inf	Inf
4/2	Infinite Saturation Flow						Inf	Inf
5/1	Infinite Saturation Flow						Inf	Inf
6/1	Infinite Saturation Flow						Inf	Inf
6/2	Infinite Saturation Flow						Inf	Inf
7/1 (Tunnel Start)	3.25	0.00	Y	Arm 3 Ahead	Inf	100.0 %	1940	1940
8/1	Infinite Saturation Flow						Inf	Inf
9/1 (Exit Ped)	3.25	0.00	Y	Arm 4 Ahead	Inf	100.0 %	1940	1940
9/2 (Exit Ped)	3.25	0.00	Y	Arm 4 Ahead	Inf	100.0 %	1940	1940

Full Input Data And Results

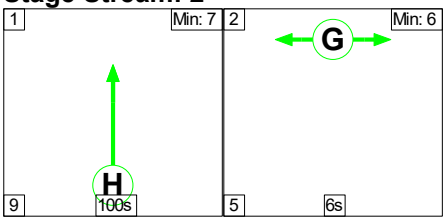
Scenario: '240 secs Sun 11-12 Bus+Ped' (FG1: 'Sun 11-12', Plan 4: 'Network Control Plan 4 300 secs Bus+Ped')

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Stage Timings

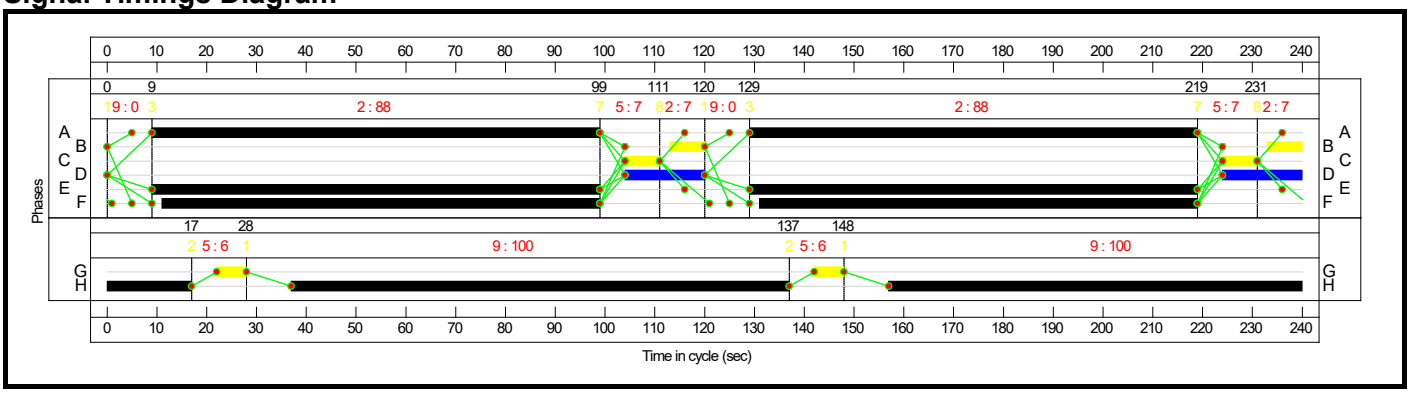
Stage Stream: 1

Stage	1	3	7	8	1	3	7	8
Duration	0	88	7	7	0	88	7	7
Change Point	0	9	99	111	120	129	219	231

Stage Stream: 2

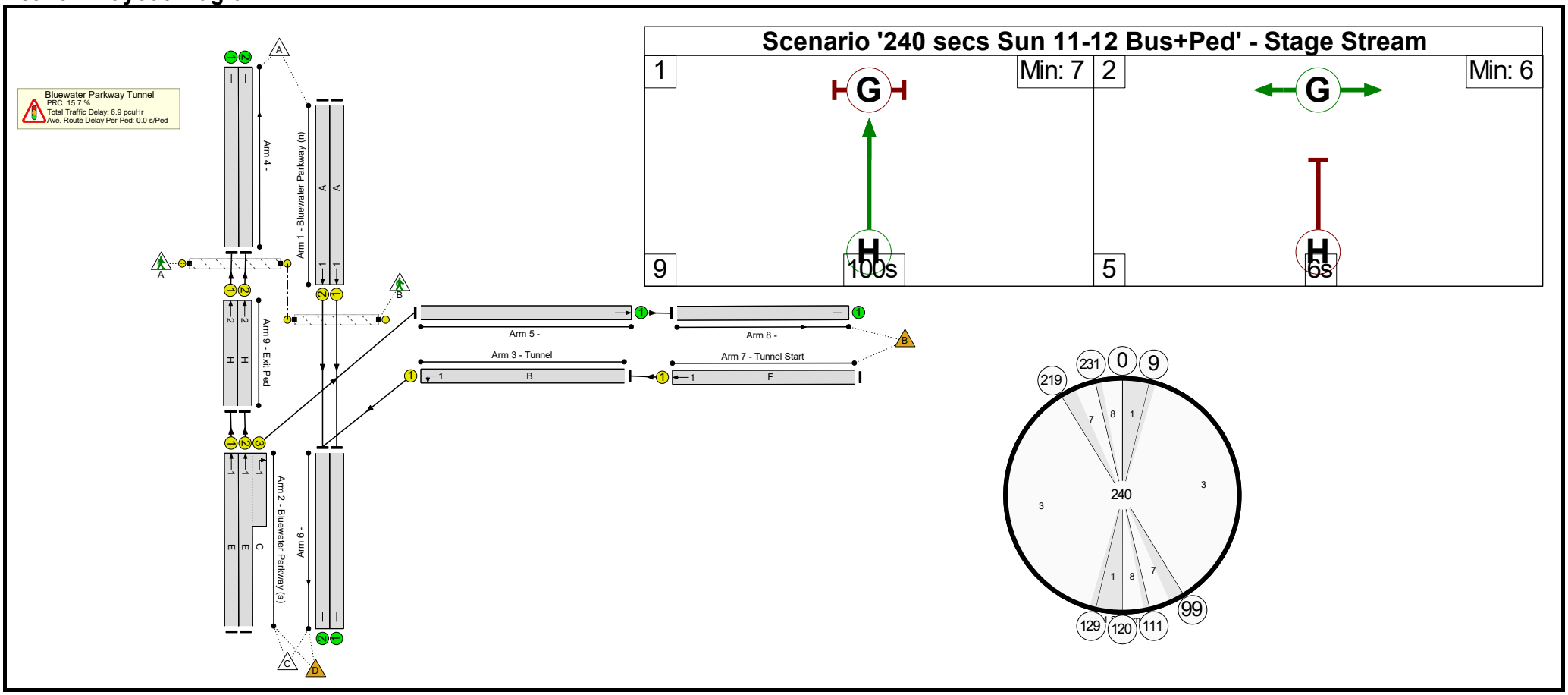
Stage	1	2	1	2
Duration	100	6	100	6
Change Point	148	17	28	137

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network: Bean Tunnel	-	-	**N/A**	-	-		-	-	-	-	-	-	**77.8%**
Bluewater Parkway Tunnel	-	-	**N/A**	-	-		-	-	-	-	-	-	**77.8%**
1/1	Bluewater Parkway (n) Ahead	U	1	N/A	A		2	180	-	1144	1940	1471	77.8%
1/2	Bluewater Parkway (n) Ahead	U	1	N/A	A		2	180	-	286	1940	1471	19.4%
2/1	Bluewater Parkway (s) Ahead	U	1	N/A	E		2	180	-	251	1940	1471	17.1%
2/2+2/3	Bluewater Parkway (s) Right Ahead	U	1	N/A	E C		2	180:14	-	249	1940:1783	977+119	22.7 : 22.7%
3/1	Tunnel Left	U	1	N/A	B		2	14	-	27	1771	118	22.9%
4/1		U	N/A	N/A	-		-	-	-	251	Inf	Inf	0.0%
4/2		U	N/A	N/A	-		-	-	-	222	Inf	Inf	0.0%
5/1	Ahead	U	N/A	N/A	-		-	-	-	27	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	1144	Inf	Inf	0.0%
6/2		U	N/A	N/A	-		-	-	-	313	Inf	Inf	0.0%
7/1	Tunnel Start Ahead	U	1	N/A	F		2	176	-	27	1940	1439	1.9%
8/1		U	N/A	N/A	-		-	-	-	27	Inf	Inf	0.0%
9/1	Exit Ped Ahead	U	2	N/A	H		2	200	-	251	1940	1633	15.4%
9/2	Exit Ped Ahead	U	2	N/A	H		2	200	-	222	1940	1633	13.6%
Ped Link: P1	Unnamed Ped Link	-	1	-	D		2	32	-	0	-	9600	0.0%
Ped Link: P2	Unnamed Ped Link	-	-	-			0	0	-	0	-	72000	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: Bean Tunnel	**-**	**-**	**0**	**0**	**0**	**4.5**	**2.4**	**0.0**	**6.9**	**-**	**-**	**-**	**-**
Bluewater Parkway Tunnel	**-**	**-**	**0**	**0**	**0**	**4.5**	**2.4**	**0.0**	**6.9**	**-**	**-**	**-**	**-**
1/1	1144	1144	-	-	-	2.7	1.7	-	4.4	14.0	22.2	1.7	24.0
1/2	286	286	-	-	-	0.3	0.1	-	0.4	5.6	2.7	0.1	2.8
2/1	251	251	-	-	-	0.3	0.1	-	0.4	5.5	2.3	0.1	2.4
2/2+2/3	249	249	-	-	-	0.6	0.1	-	0.8	11.4	2.0	0.1	2.1
3/1	27	27	-	-	-	0.5	0.1	-	0.6	80.0	0.9	0.1	1.0
4/1	251	251	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
4/2	222	222	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	27	27	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	1144	1144	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	313	313	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	27	27	-	-	-	0.0	0.0	-	0.0	5.4	0.2	0.0	0.2
8/1	27	27	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	251	251	-	-	-	0.0	0.1	-	0.1	1.6	0.2	0.1	0.3
9/2	222	222	-	-	-	0.0	0.1	-	0.1	1.6	0.2	0.1	0.3
Ped Link: P1	0	0	-	-	-	-	-	-	0.0	0.0	-	-	0.0
Ped Link: P2	0	0	-	-	-	-	-	-	Inf	Inf	-	-	Inf

C1 Stream: 1 PRC for Signalled Lanes (%): 15.7 Total Delay for Signalled Lanes (pcuHr): 6.71 Cycle Time (s): 240
C1 Stream: 2 PRC for Signalled Lanes (%): 485.5 Total Delay for Signalled Lanes (pcuHr): 0.21 Cycle Time (s): 240
PRC Over All Lanes (%): 15.7 Total Delay Over All Lanes(pcuHr): 6.92